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To: EDGES Group
From: Alan E.E. Rogers
Subject: EDGES-3 Thermal tests

1] Tests on empty antenna box

The antenna box (i.e. box which connects to the receiver box) was placed in the full Sun on 2 July. There was little, if any wind, the temperature climbed from 29 to 48°C with the unpainted side of the top cover exposed to the Sun. With the side which had been painted with Goldstone #7 the temperature only climbed to 34°C.

2] Tests on receiver box in screen rom with the top cover removed the temperature measured in the inner shielded box with Nuvo computer was 31°C compared with the ambient room temperature of 27°C. The temperature of the ambient load in the front-end was 30 °C. This test was done with the front-end temperature control off, the Nuvo running (without Fastspec) and an average charge current of 2.9 amps at 14 volts which is a 41 watt power input. When the cover with painted side up is placed on the box the temperature climbed up to 37°C inside the inner box overnight during with the ambient room temperature rose to 28°C for a 9°C rise with 41 watts. [With the temperature controller and Fastspec running the power from the batteries is expected to be about 80 watts so that a temperature rise of about 20°C might be expected.] When the inner box temperature rose to 37°C the ambient load reached 35°C and the temperature of the box itself measured externally with a probe was about 32°C and was fairly uniform top to bottom.

The temperature at night in the Catlow Valley region of Oregon is expected to be 15°C or lower so a rise to 35°C in the inner box should be acceptable. Raising the control temperature set by the PR59 controller to 30 or 35°C could be used, but would require calibration at these temperatures. Another way of increasing the margin would be to circulate dry air through the receiver box as shown in Figure 1. This would almost certainly be required for a more permanent installation in Western Australia.

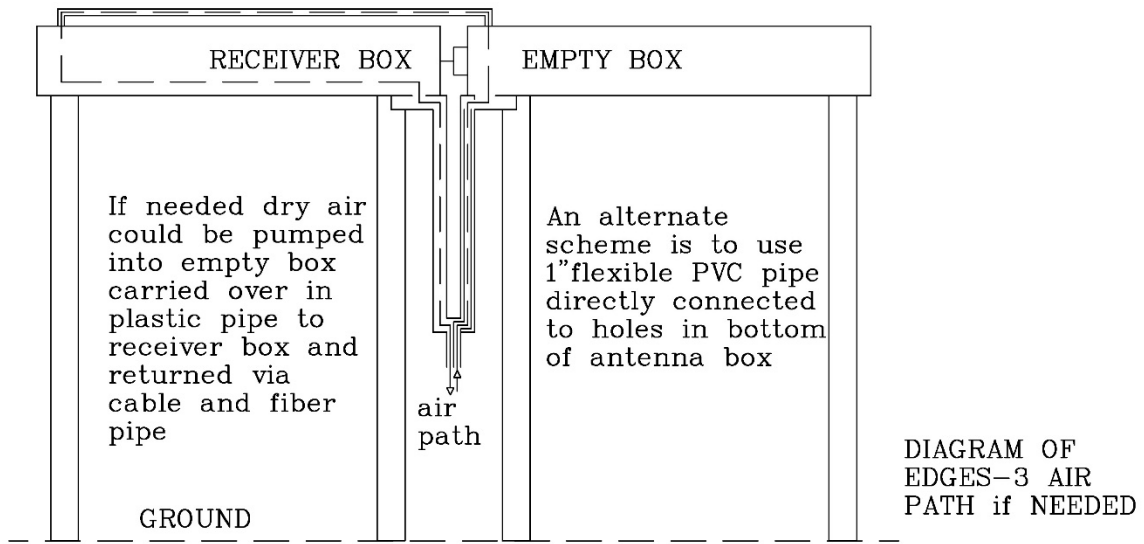


Figure 1.